time equity was recorded on their books at market value, is incredibly naive at best, and downright misleading at worst. AT&T and their witnesses Cornell/Hirshleifer certainly should understand that most of the equity on the RHCs books is associated with retained earnings, not original issues of equity. Retained earnings are never recorded on a company's books at market value; they are always recorded at book, or historical cost. Furthermore, as I demonstrated in my reply affidavit, the book value of the ILECs' equity has been reduced by at least $28 billion as a result of accounting write-offs for the discontinuance of FAS 71 and the adoption of the new accounting standard for Other Post Employment Benefits. These huge write-offs, which represented more than 52 percent of the total equity in the ILECs' capital structures, had no effect whatsoever on their cash flows or market values. In addition, that small part of the book value of equity associated with original issuances of stock was recorded at prices that are significantly less than current market values. For these reasons, AT&T's argument that the RHCs' book value capital structure represents the historical financing of the local exchange network is incorrect.

22. AT&T's fourth argument, that I have urged state utility commissions to adopt book value capital structures rather market value capital structures, is outrageous. I have never urged a state utility commission to adopt a book value capital structure rather than a market value capital structure in either traditional rate of return proceedings or forward-looking economic cost proceedings. I have been well aware since I began working in finance that financial theory requires the use of market value capital structures to estimate the cost of capital, not book value capital structures. In the 1993 testimony cited by AT&T, I do not address the issue of the use of market value versus book value capital structures. I merely recognized at that time that the Virginia Corporation Commission had announced it would only accept book value capital structures to estimate the cost of capital in traditional rate proceedings. My testimony

recommended that the Commission adopt the subsidiary's book value capital structure rather than the parent's book value capital structure because that value best represented the book value capital structure of the subsidiary. Clearly, a market value capital structure would have better represented the actual amount of debt and equity invested in the subsidiary's assets, but the Virginia Commission was unwilling to consider market value capital structures in traditional rate of return proceedings. If AT&T had read my testimony carefully, it could not have made such an egregious misrepresentation of my actual testimony.

23. Cornell/Hirshleifer speculate on page 25 of their affidavit that the use of book value weights is an attempt to "approximate the cost of capital for the network access business as if it were a stand-alone business." Given Dr. Cornell's prior recognition that the cost of capital must be estimated in terms of market values, it is surprising that Cornell/Hirshleifer made no attempt to approximate the market value capital structure "for the network access business as if it were a stand-alone business." As described in paragraph 27 of my Reply Affidavit, the market value capital structure of the local exchange companies can be easily approximated from standard valuation formulas. Morgan Stanley, for example, values local exchange company assets by calculating the local exchange companies' most recent EBITDA[4] and multiplying this value by a factor of 7 or 8. This value represents the market value of the enterprise, and the percent debt in the market value capital structure can be obtained by dividing total debt by the value of the enterprise.[5] I have performed this calculation for three groups of local exchange companies. To be conservative, I have reduced the EBITDA multiple in the calculation by 15 percent. This calculation results in a range of implied market value capital structures for the local

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[4] EBITDA is defined as earnings before interest, taxes, depreciation, and amortization. It is frequently used as a measure of a company's ability to generate cash from its operations.

[5] Morgan Stanley Dean Witter, "Telecommunications Services—Sprint," December 3, 1998, page 3.

exchange companies containing 16 percent to 22 percent debt and 78 percent to 84 percent equity (see Schedule 3 of my Reply Affidavit).

24. Cornell/Hirshleifer's use of the RHCs' book value capital structure weights had a significant impact on their cost of capital recommendation. They obtain a weighted average cost of capital of 9.15 percent using market value capital structure weights, and a 8.12 percent estimate using book value capital structure weights. Cornell/Hirshleifer's final recommended 8.63 percent cost of capital is a simple average of their estimates using book and market value weights. Thus, Cornell/Hirshleifer's use of book value capital structure weights by itself reduced their estimate of the ILECs' weighted average cost of capital by 52 basis points. Of course, this number would have been even larger if they had correctly estimated the ILECs' cost of equity.

25. Cornell/Hirshleifer apply the DCF and CAPM Models to the five RHCs as a proxy for the ILECs. In my Reply Affidavit, I presented strong evidence that traditional cost of equity methods such as the DCF and CAPM do not provide accurate estimates of the cost of equity for companies such as the RHCs that are being fundamentally transformed through regulatory restructuring, mergers, and strategic investments in new technologies that allow voice, data, and video, and data services to be offered over the same facilities. In response to these changes, Bell Atlantic has merged with NYNEX, and SBC has merged with Pacific Telesis and SNET. In addition, SBC has agreed to merge with Ameritech and Bell Atlantic has agreed to merge with GTE. Although the financial community expects these companies to achieve significant earnings growth as a result of their mergers, the projected earnings growth associated with the mergers is not yet reflected in the analysts' growth rates Cornell/Hirshleifer relied on in their DCF analysis. However, the expected earnings growth anticipated through the mergers is necessarily included in these companies' stock prices. The use of a stock price that includes

anticipated merger-related earnings growth, along with growth rates that cannot include merger-related growth, produces a downwardly-biased DCF estimate of the cost of equity.

26. In addition, the Cornell/Hirshleifer RHC sample is simply too small to provide reliable cost of equity estimates. Most analysts recognize that it is better to apply estimation techniques such as the DCF Model to large samples of companies so that overestimates for some companies will be offset by underestimates for other companies. Five companies is too small a sample to reduce measurement errors in applying the DCF and CAPM Models to individual companies. This conclusion is especially relevant since the five companies at issue are all subject to the same underestimation bias associated with companies in a restructuring industry.

27. AT&T claims that the RHCs are the best proxy for the ILECs because the RHCs' "principal subsidiaries provide interstate and wholesale local exchange services." [AT&T Responsive Submission at page 5.] This argument fails to recognize that financial analysts measure risk in terms of the volatility of returns to investors rather than in terms of line of business. The CAPM used by AT&T's affiants Cornell/Hirshleifer, for example, is based on the assumption that all companies with the similar betas are equally risky, independent of their line of business. Thus, Cornell/Hirshleifer's use of the CAPM is inconsistent with AT&T's assertion that companies must be in the same line of business in order to be risk proxies to estimate the cost of capital.

28. AT&T's argument for using the RHCs as proxies for the interstate access business also ignores the fact that interstate access is a relatively small percentage of the RHCs' current and expected future business. Some of the RHCs' current and expected future businesses are more risky than the interstate access business, while others are less risky. Given the uncertainty and rapid change in telecommunications technologies and markets, however, it is certainly less risky to provide a bundle of telecommunications services than to provide interstate access on a

stand-alone basis. Thus, AT&T's choice of the RHCs as a risk proxy for interstate access necessarily understates the cost of equity for interstate access on a stand-alone basis.

29. AT&T could have avoided the difficulties of applying the DCF and CAPM Models to the RHCs by relying entirely on a broad group of competitive firms such as the S&P Industrials. The S&P Industrials are a natural proxy for the purpose of estimating the ILECs' weighted average cost of capital because: (1) the S&P Industrials are a well-known group of companies of average risk; (2) the use of a larger group of companies such as the S&P Industrials tends to reduce the measurement error associated with the DCF and CAPM results for individual companies; (3) the S&P Industrials as a group are not experiencing the same degree of industry restructuring as the RHCs; and (4) the risk profile of the S&P Industrials as a group is similar to the risk profile of the ILECs. While the S&P Industrials currently experience a somewhat greater level of competition than the ILECs, the ILECs are expected by financial analysts to face a similar degree of competition in the very near future. In addition, the ILECs have a higher level of operating leverage than the S&P Industrials due to the fixed-cost nature of their business, and the ILECs are experiencing a greater than average level of technological change and regulatory restructuring.

IV. Three-Stage DCF Model

30. Cornell/Hirshleifer estimate the ILECs' cost of equity using a DCF Model that assumes that growth occurs in three stages: a first stage of four years, where earnings are expected to grow in line with the I/B/E/S analysts' earnings growth forecast;[6] a second stage of

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[6] Cornell/Hirshleifer describe the first stage as being five years, but an examination of their model indicates that dividends grow at the I/B/E/S growth rate for only four years during the first stage.

15 years, where earnings growth declines linearly to the Cornell/Hirshleifer estimate of long-run growth in GNP, 5.5 percent; and a third stage beginning in year 20, where earnings grow at 5.5 percent forever. Cornell/Hirshleifer defend their unusual model on the grounds that a company's earnings cannot grow at a rate faster than the growth in GNP forever. If a company were to grow at a rate greater than the growth in GNP forever, at some point far in the future, perhaps 400 years or more out, that company would represent most of the economy.

31. In proposing the three-stage DCF Model, Cornell/Hirshleifer fail to recognize that the truth of Statement A,

> *Companies cannot grow at a rate greater than the growth in GNP forever.*

does not imply the truth of Statement B,

> *Companies' earnings will grow at the I/B/E/S growth rate for four years; their earnings growth will then decline linearly to the long-run growth in GNP for fifteen years; and their earnings beginning in year 20 will then grow at the GNP growth rate forever.*

Even though companies cannot grow at a rate greater than the growth in GNP forever, it is certainly possible that their earnings can grow at rates greater than the growth in GNP for long periods of time. Since the output of the economy as a whole is so much larger than the output of any single company, it would take a very large number of years of growth in excess of the GNP growth rate for a single company to "devour the economy,"

32. Cornell/Hirshleifer also fail to recognize, when they propose to substitute a three-stage DCF Model for the single-stage DCF Model, that: (1) companies do not have to grow at the same rate forever for the single-stage DCF Model to be a reasonable approximation of how prices are determined in capital markets; (2) it is common for companies to grow at rates significantly greater than the rate of growth in GNP for long periods of time; (3) the 8.16 percent average I/B/E/S growth rate for the Cornell/Hirshleifer proxy group of RHCs is easily achievable for a period longer than five years, especially in an industry such as telecommunications, which

is growing significantly faster than the economy as a whole; and (4) evidence suggests that investors expect the RHCs to grow at a rate significantly greater than 5.5 percent in the long run. The Commission should reject the Cornell/Hirshleifer three-stage DCF Model to estimate the ILECs' cost of equity.

33. To understand why the single-stage DCF Model may be a reasonable approximation of reality, even if firms cannot grow at rates exceeding the GNP growth rate forever, recall that the DCF Model assumes that the price of a company's stock is equal to the discounted value of its future stream of dividends. Because future dividends are discounted at a rate, k, that exceeds the growth rate, g, dividends beyond a specific finite period, such as 40 or 50 years, have very little impact on the firm's stock price. Thus, the validity of the single-stage DCF Model depends only on whether firms can grow at a constant growth rate in excess of GNP for 40 or 50 years, not on whether firms can grow at a constant growth rate in excess of GNP forever.[7]

34. That companies could grow at rates significantly greater than the rate of growth in the GNP for long periods of time is not merely a logical possibility, but a reality. The earnings of companies such as MCI, Intel, Merck, Wal-Mart, Gillette, and Johnson & Johnson have all grown at rates exceeding 14 percent per year, a rate that is obviously greater than the 8.16 percent weighted average I/B/E/S growth rate for the Cornell/Hirshleifer RHC group. Furthermore, these companies' growth has occurred over a period of time much longer than the five-year period of I/B/E/S growth arbitrarily assigned by Cornell/Hirshleifer in their three-stage DCF Model. In fact, a study of earnings' growth for companies in the S&P Industrials over the period 1979 to 1996 shows that more than half the companies in this group had earnings growth

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[7] Using the Cornell/Hirshleifer 9.68 percent cost of equity, for example, and their 5.5 percent long-term growth rate, the first 40 years of dividends account for 80 percent of the stock price, and all dividends beyond year 50 account for less than 14 percent of the stock price.

that exceeded GNP growth in every year of this 17-year period. Furthermore, of these companies, more than one-third had earnings growth that either equaled or exceeded 150 percent of GNP growth in each year during this period.

35. The Cornell/Hirshleifer assumption that the RHCs' growth will decline from the 8.16 percent I/B/E/S growth rate after the fifth year is also refuted by Value Line data commonly available to investors. Value Line publishes an estimate of each company's long-run growth from internal sources beyond the period beginning in 2001—2003. Growth from internal sources is measured by the product of the company's forecasted rate of return on equity and its forecasted retention ratio. As shown below in Table 1, Value Line's long-run internal growth rate for the RHCs is 13.6 percent, indicating that Value Line expects the RHCs to grow at rates higher than the 8.16 percent average I/B/E/S growth rate in the period beyond five years.

Table 1

Value Line Retained to Common Equity
2001—2003 for Regional Bell Holding Companies

	Internal Growth
Ameritech	14.5
Bell Atlantic	10.5
BellSouth	15.0
SBC	14.5
Weighted Average	13.6[8]

36. The arbitrary nature of the Cornell/Hirshleifer growth assumptions is further demonstrated by the Morgan Stanley growth forecasts published for AT&T for periods extending both five and ten years out. Contrary to the prediction of Cornell/Hirshleifer that no company can grow in excess of its I/B/E/S growth rate for more than five years, Morgan Stanley predicts an increase in AT&T's growth rate, from 8 percent for the first five years, to 13 percent during the

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[8] U S West is excluded from this calculation because Value Line shows "NMF" for the company's 1998 and 1999 returns on equity.

following five years. ["AT&T: Going Local," Morgan Stanley, U.S. Investment Research, February 28, 1997.]

37. The reasonableness of treating the RHCs' I/B/E/S growth rates as estimates of long-run growth is supported in statements by Mr. Damodaran, a source frequently cited in the Cornell/Hirshleifer affidavit. In his lectures on the topic Discounted Cash Flow Valuation, Mr. Damodaran recommends that a suitable long-term growth rate for use in a multi-stage DCF Model would range from a lower end of 7 percent to an upper end of 10 percent. Mr. Damodaran further suggests that the best use for a three-stage DCF Model is for firms that are growing at an extraordinary rate at present, a definition he characterizes as being subjective; but he suggests that growth rates in excess of 25 percent would qualify. [Aswath Damodaran, *Damodaran on Valuation*, p. 119, Wiley, New York, 1994.] The RHCs' average growth rate is clearly within the range 7 percent to 10 percent, and certainly does not exceed 25 percent.

V. Anomalies of Cornell/Hirshleifer Three-Stage DCF Model

38. The reasonableness of the Cornell/Hirshleifer three-stage DCF results can be tested against the commonly accepted standard that the cost of capital should be higher for higher risk companies than for lower risk companies. I have tested the internal consistency of the Cornell/Hirshleifer's DCF Model in several different ways that refer to this standard. In each case, the DCF result using the Cornell/Hirshleifer three-stage DCF Model is lower for companies with higher risk, and higher for companies having lower risk. These tests provide conclusive evidence that the Cornell/Hirshleifer three-stage DCF Model should be rejected.

39. First, I have compared Cornell/Hirshleifer's DCF results for local exchange telecommunications companies to the Dow Jones betas used by Cornell/Hirshleifer for these companies. Data on the Cornell/Hirshleifer DCF results for local exchange companies is shown below on Table 2, along with the Dow Jones betas for these companies. As shown there, the

companies with the highest betas have the lowest DCF results, reversing the normal expected relationship between risk and return. Century Telephone and Cincinnati Bell have the highest betas among the local exchange telecommunications companies, 1.01 and 1.11, respectively, and the lowest DCF results, 7.53 percent, and 8.95 percent. On the other hand, ALLTEL and U S West have the lowest betas, .55, and .57, and above average DCF results, 9.61 percent and 9.92 percent.[9]

Table 2

Cornell/Hirshleifer DCF Results For Local Exchange Companies Using Three-Stage DCF Model Compared to Dow Jones Betas

Company	DCF Result	Dow Jones Beta
Century	7.53%	1.01
BellSouth	8.83%	0.76
Cincinnati Bell	8.95%	1.11
SBC	9.12%	0.68
Ameritech	9.22%	0.78
SNET	9.30%	0.59
Alltel	9.61%	0.55
Bell Atlantic	9.62%	0.83
US West	9.92%	0.57
GTE	10.23%	0.68

40. Second, Cornell/Hirshleifer claim that a telecommunications company's non-local exchange businesses are considerably riskier than its local exchange business. If this claim were true, DCF results for interexchange carriers AT&T, MCI, and Sprint should be significantly higher than DCF results for the RHCs. Using Cornell/Hirshleifer's three-stage DCF Model, I have calculated DCF results for three interexchange carriers, AT&T, MCI, and Sprint. As shown below on Table 3, the average DCF result for the interexchange carriers using the Cornell/Hirshleifer three-stage DCF Model is only 7.75 percent, as compared to their result of 9.28 percent for the RHCs. Again, these data illustrate the incongruity of the results obtained from the Cornell/Hirshleifer three-stage DCF Model.

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[9] All data are obtained from Mr. Hirshleifer's testimony filed on behalf of AT&T and MCI in Florida in Docket No. 980696-TP; all data are the same time period used in their Responsive Submission in this proceeding.

Table 3

Anomalous Discounted Cash Flow Results For Interexchange Carriers Using Cornell/Hirshleifer Three-Stage DCF Model And Comparable Time Data

Company	Dec. 97 Closing Price	I/B/E/S g	Annual Dividend	DCF Result
AT&T	61.3125	7.80%	$1.32	8.14%
MCI	42.8125	11.19%	$0.05	5.71%
Sprint	58.6250	12.54%	$1.00	8.64%
Market Weighted Average				7.75%

41. Third, I have compared DCF results for electric and natural gas companies Dr. Cornell analyzed in testimony in California (the electric companies are also shown in Cornell/Hirshleifer Attachment 11) to the Cornell/Hirshleifer DCF results for the RHCs. As shown on Schedule 1, using the Cornell/Hirshleifer three-stage DCF methodology and a 5.5 percent long-term growth in GNP, the weighted average DCF result for the natural gas utilities is 10.01 percent, and for the electric utilities 9.26 percent. Since telecommunications companies are generally considered to be more risky than natural gas or electric companies, the DCF results using the Cornell/Hirshleifer three-stage DCF Model should have been significantly higher for the RHCs than for the natural gas and electric utilities. Again, the Cornell/Hirshleifer three-stage DCF Model produces lower DCF results for companies which have higher risk.

42. Fourth, I have compared the 8.61 percent DCF result Mr. Hirshleifer recently reported in Florida for all companies in the S&P 500 (using the Cornell/Hirshleifer three-stage DCF Model and year-end 1997 prices) to the Cornell/Hirshleifer 9.28 percent average DCF result for the RHCs. Since Cornell/Hirshleifer claim that the S&P 500 is significantly more risky than telecommunications companies, they should have obtained a significantly higher DCF result for the S&P 500 than for the RHCs. In fact, Mr. Hirshleifer's 8.61 percent DCF result for the S&P 500 is significantly less than the average DCF result Cornell/Hirshleifer obtain for the RHCs.

43. Finally, I have regressed the Cornell/Hirshleifer DCF results for companies in the S&P 500 that pay dividends of at least two percent to the betas of the companies in the same sample. As shown in Table 4 below, I find a significant negative correlation between the Cornell/Hirshleifer three-stage DCF Model results for the sample companies and these companies' betas.[10]

Table 4

Regression of Cornell/Hirshleifer DCF Results vs. Merrill Lynch Betas

	Intercept	Beta	Adjusted R Square	F
Coefficient	0.106	-0.01	0.035	5.85
t Statistic	27.717	-2.42		

44. I conclude that the results obtained from the Cornell/Hirshleifer three-stage DCF Model fail the common sense test that the cost of capital should increase with the risk of an investment. Contrary to a reasonable expectation, the Cornell/Hirshleifer three-stage DCF Model consistently obtains lower cost of capital results for companies which Cornell/Hirshleifer claim have higher risk. These data provide overwhelming evidence that the Cornell/Hirshleifer three-stage DCF Model should be rejected.

VI. Capital Asset Pricing Model ("CAPM")

45. The CAPM is an equilibrium model of the security markets in which the expected or required return on a given security is equal to the risk free rate of interest, plus the company equity "beta," times the market risk premium:

Cost of equity = Risk-free rate + Equity beta x Market risk premium

The risk-free rate in this equation is the expected rate of return on a risk-free government security, the equity beta is a measure of the company's risk relative to the market as a whole, and the market risk premium is the premium investors require to invest in the market basket of all securities compared to the risk-free security.

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[10] When the Quarterly DCF Model results are regressed against the betas for the same companies, the correlation is positive.

46. For the beta component of the CAPM, Cornell/Hirshleifer used the beta estimates of Dow Jones Beta Analytics, which are based on five years of historical data. Cornell/Hirshleifer's historical betas significantly underestimate the future risk of the RHCs. The Telecommunications Act of 1996 removed all barriers to entry in the RHCs' local exchange businesses. As a result of this legislation, the risk of investing in the RHCs has increased significantly, and the RHCs' forward-looking betas are undoubtedly greater than the five-year historical betas used by Cornell/Hirshleifer.

47. Cornell/Hirshleifer estimated the risk premium in two ways. First, they estimated the DCF cost of equity for their sample of companies in the S&P 500 using the same three-stage DCF Model used in their DCF calculation of the cost of equity. Second, they used historical risk premium data obtained from Ibbotson Associates and a book published in 1994 entitled, *Stocks for the Long Run*, by Jeremy Siegel.

48. The DCF Model Cornell/Hirshleifer use to estimate the risk premium on the S&P 500 is based on the same three-stage DCF Model Cornell/Hirshleifer used in the DCF calculation of the cost of equity. As noted above, their DCF Model is based on the arbitrary and incorrect assumption that companies can grow at the I/B/E/S growth rate for only four years, and that the companies' growth must then decline linearly to the rate of growth in GNP over a period of 15 years. This basic assumption, which is contrary to the evidence that firms can grow at the I/B/E/S growth rate for many years, produces a downward bias in their DCF calculations. In addition, their DCF Model ignores both the actual quarterly payment of dividends and the existence of flotation costs. Thus, the risk premium results obtained from Cornell/Hirshleifer's three-stage DCF Model should be rejected in this proceeding.

49. To estimate the risk premium on the market portfolio, Cornell/Hirshleifer also examine both arithmetic mean and geometric mean risk premium results for four periods: 1802-1997, 1926-1997, 1951-1997, and 1971-1997. Cornell/Hirshleifer's arithmetic mean risk premium results are significantly higher than their reported geometric mean risk premium results in every time period. From these data Cornell/Hirshleifer use their judgment to arrive at the conclusion that the appropriate risk premium on stocks over the yield on Treasury bills is 7.5 percent and the appropriate risk premium on stocks over the yield on Treasury bonds is 5.5 percent.

50. Cornell/Hirshleifer's use of geometric mean risk premium results and of time periods other than the period 1926—1997 are contrary to positions Dr. Cornell has previously taken in his book, *Corporate Valuation*, cited in the Cornell/Hirshleifer affidavit. With regard to the use of geometric mean rather than arithmetic mean risk premium data, Dr. Cornell states in his book at page 217,

> As shown by Bodie, Kane, and Marcus, the best estimate of expected returns over a given future holding period is the arithmetic average of past returns over the same holding period.

With respect to the use of a sample period, Dr. Cornell states at pages 212-213 of his book:

> Before an average can be calculated, the sample period must be determined. The longest period for which reliable stock price data are readily available is January 1926 to the present. Given the significant variation in the risk premium, altering the sample period when calculating the average is hazardous because it can greatly affect the estimate. To avoid data mining, a reasonable solution is to use the entire period from 1926 to the present, or as a substitute, the postwar period from 1945 to the present. Finer partitioning of the sample data, even if done with the best intentions, raises the specter of introducing bias.

51. I agree with the Dr. Cornell's statement in his book that the period 1926 to the present is the longest period for which reliable data are available. During the 19th century, the stock market was comprised of very few stocks, mainly the stocks of banks, railroads, and a very few insurance companies, located in the Northeast. These stocks were thinly traded, and, since

no dividend data was available, a rough estimate had to be made of the average dividends on these stocks. Furthermore, prices for the period generally were based on averages of high and low bids, not prices at which trades actually occurred. For these and many other reasons, the historical returns on these stocks are simply not indicative of returns investors expect to receive on stock investments in 1998.

52. Given Dr. Cornell's strong preference for the use of arithmetic mean risk premium data using the period 1926 to the present, it is interesting that the arithmetic mean risk premium data for the period 1926 through 1996 is 9.15 percent over Treasury bills and 7.36 percent over Treasury bonds, approximately 170 to 190 basis points higher than the risk premia Cornell/Hirshleifer use in their cost of equity estimate.

53. In defense of their use of a risk premium that is 170 to 190 basis points below the Ibbotson risk premium Dr. Cornell has previously recommended in his published work, Cornell/Hirshleifer claim that Ibbotson no longer recommends use of the long-run arithmetic mean stock market returns from 1926 to the present. This claim is absolutely false. First, Ibbotson's 1997, 1998, and 1999 Yearbooks have been published since the appearance of the Clements article, and Ibbotson Associates continues specifically to recommend the period 1926 to the present for estimating the future risk premium on equity. With regard to the use of the arithmetic mean versus the geometric mean risk premium, Ibbotson continues to recommend that the arithmetic mean risk premium is the "correct rate for forecasting, discounting, and estimating the cost of capital." Ibbotson states further that:

> The geometric mean is backward-looking, measuring the change in wealth over more than one period. On the other hand, the arithmetic mean better represents a typical performance over single periods and serves as the correct rate for forecasting, discounting, and estimating the cost of capital. [Ibbotson Associates' *1998 Yearbook*, page 108.]
>
> For use as the expected equity risk premium in the CAPM, the *arithmetic* or *simple difference* of the *arithmetic means* of stock market returns and riskless

> rates is the relevant number. This is because the CAPM is an additive model where the cost of capital is the sum of its parts. Therefore, the CAPM expected equity risk premium must be derived by arithmetic, *not geometric*, subtraction. [Original emphasis. Ibbotson Associates' *1998 Yearbook*, page 157.]

54. Second, Cornell/Hirshleifer mischaracterize Ibbotson's statements regarding survivorship bias. Cornell/Hirshleifer, at pages 20—21 in their affidavit, refer to the Ibbotson and Brinson book *Global Investing*. The Ibbotson and Brinson book clearly refers to survivorship bias in measuring *world* equity returns, not to the performance of equities in the U.S. market. Ibbotson addresses this issue in his 1999 Yearbook, when he states,

> While the survivorship bias evidence may be compelling on a worldwide basis, one can question its relevance to a purely U.S. analysis. If the entity being valued is a U.S. company, then the relevant data set should be the performance of equities in the U.S. market. [Ibbotson Associates, *Stocks, Bonds, Bills and Inflation, 1999 Yearbook*, pp. 56—57.]

Clearly, Ibbotson *does not* believe that his long-run risk premium is overstated, and the most recent Ibbotson long-horizon equity risk premium comparing the total returns on stocks minus the return on long-term government bonds is 8.0 percent.

55. Third, Professor Ibbotson states unequivocally in his *1999 Yearbook* at page 47 that there is no "conclusive" or "compelling" evidence to assume that "the estimate of the equity risk premium is upwardly biased since the stock market is currently priced high." To the contrary, he states,

> Our own empirical evidence suggests that the yearly difference between the stock market total returns and the U.S. Treasury bond income return in any particular year is random...The best estimate of the expected value of a variable that has behaved randomly in the past is the average (or arithmetic mean) of its past values. [Ibbotson Associates 1999 Yearbook, page 48.]

VII. Overall Tests of Reasonableness

56. In an attempt to support the reasonableness of their final recommended weighted average cost of capital for the ILECs, Cornell/Hirshleifer note that their cost of capital estimates "are similar to those used by highly sophisticated investment banks." [Cornell/Hirshleifer

Affidavit at page 25.] In particular, Cornell/Hirshleifer contend that a January 1996 Salomon Brothers report, a September 18, 1996, proxy statement/prospectus in the then proposed Bell Atlantic/NYNEX merger, an August 1998 J. P. Morgan telecommunications report, and an October 15, 1998, statement in the Ameritech/SBC merger proxy statement all support the Cornell/Hirshleifer estimates. My review of the documents cited by Cornell/Hirshleifer indicates that Cornell/Hirshleifer have misrepresented the positions of the cited parties and that these "highly sophisticated investment banks" do not, in fact, support Cornell/Hirshleifer's position on the ILECs' weighted average cost of capital. In addition, Cornell/Hirshleifer's list of citations is highly selective: they fail to cite published estimates of the telecommunications companies' weighted average cost of capital that significantly exceed the Cornell/Hirshleifer estimate.

57. Cornell/Hirshleifer misrepresent the positions of their cited Wall Street sources in several ways. First, Cornell/Hirshleifer fail to acknowledge that the *after-tax* weighted average costs of capital and discount rates cited in these reports are not comparable to the Cornell/Hirshleifer *before-tax* estimate of the ILECs' weighted average cost of capital. Since the before-tax weighted average cost of capital generally exceeds the after-tax weighted average cost of capital by approximately 50 to 100 basis points, if the cited costs of capital and discount rates have the slightest relevance in this proceeding, they would have to be increased by 50 to 100 basis points to be comparable to Cornell/Hirshleifer's recommendation in this proceeding.

58. Second, Cornell/Hirshleifer misrepresent the numbers contained in the Merrill Lynch and Salomon Smith Barney proxy statements. The proxy statements make clear that Merrill Lynch and Salomon Smith Barney are not presenting estimates of the weighted average cost of capital for any of the companies involved. Indeed, the purpose of the Merrill Lynch and Salomon Smith Barney analyses is to determine the fairness of the proposed exchange ratios between Bell Atlantic/NYNEX and between Ameritech/SBC. To determine the fairness of these

exchange ratios, Merrill Lynch and Salomon Smith Barney were attempting to value these companies' shares. Since the share prices are also required inputs to the process of estimating these companies' weighted average costs of capital, Merrill Lynch and Salomon Smith Barney were faced with a situation where they had just one equation to determine two unknowns, the value of the shares and the weighted average cost of capital. As a matter of mathematics, there are many combinations of share values and costs of capital that will solve a single equation; and hence, no unique solution exists for either unknown. To resolve this dilemma, Merrill Lynch and Salomon Smith Barney chose not to estimate the weighted average cost of capital. Instead, they performed many different analyses to assess the fairness of the stock exchange ratio used in the proposed mergers in which the weighted average cost of capital was not an input. Merrill Lynch, for example, included analyses of: (1) comparative stock price performance; (2) market values of public comparables; (3) intrinsic values; (4) earnings contributions; (5) market price forecasts; (6) pro forma estimates of EPS growth; (7) hypothetical share prices of New Bell Atlantic stock; 8) potential incremental share price impact of the merger; and (9) selected stock-for-stock transactions. In addition, Merrill Lynch also performed a net present value analysis in which they were forced to *assume* a specific discount rate because they had not performed an independent analysis of the weighted average cost of capital. Assuming a discount rate, Merrill Lynch and Salomon Smith Barney simply solved for the present value, given the assumed discount rate. Thus, these analysts can not be used to justify any estimate of the ILECs' weighted average cost of capital, since they did not provide an estimate of the weighted average cost of capital. In addition, the discount rates used by Merrill Lynch and Salomon Smith Barney, as noted above, were after-tax discount rates, not before-tax discount rates.

59. Third, Cornell/Hirshleifer fail to acknowledge that Merrill Lynch and Salomon Smith Barney specifically state that investors are not entitled to rely on any single part of their

analyses outside of the context for which they were intended. On page 45 of the Joint Proxy/Prospectus for the Bell Atlantic/NYNEX merger, for example, Merrill Lynch states:

> Merrill Lynch believes that its analyses must be considered as a whole and that selecting portions of its analyses and the factors considered by it, without considering all such factors and analyses, could create an incomplete view of the processes underlying its opinion.

Merrill Lynch also states on page 45 of the Joint Proxy/Prospectus that: (1) its estimates "are not necessarily indicative of actual past or future values or results;" (2) its estimates are "inherently subject to uncertainty;" (3) "neither Merrill Lynch nor any other person assumes responsibility for [the estimate's] accuracy;" and (4) analyses relating to the value of individual businesses "do not purport to be appraisals and do not necessarily reflect the prices at which businesses may be sold in the future." In particular, Merrill Lynch states:

> Any estimates incorporated in the analyses performed by Merrill Lynch are not necessarily indicative of actual past or future values or results, which may be significantly more or less favorable than suggested by such estimates or analyses. Because such estimates are inherently subject to uncertainty, neither Merrill Lynch nor any other person assumes responsibility for their accuracy. In addition, analyses relating to the value of businesses do not purport to be appraisals and do not necessarily reflect the prices at which businesses may be sold in the future or at which their shares of capital stock may trade in the future.

60. Cornell/Hirshleifer also fail to refer to sources such as the well-known Ibbotson Associates' cost of capital estimates for telecommunications firms, which, not surprisingly, are significantly higher than the Cornell/Hirshleifer estimate of the ILECs' weighted average cost of capital. Ibbotson Associates' cost of capital estimates are published in their publication titled, *Cost of Capital Quarterly*. Using five different methodologies, Ibbotson Associates provides five estimates of the after-tax weighted average cost of capital for the telecommunications industry composite. At June 1998, these estimates of the after-tax cost of capital ranged from 10.06 percent to 13.39 percent. The Ibbotson Associates' before-tax equivalent cost of capital estimates would be approximately 50 to 100 basis points higher than the after-tax cost of capital estimates;

and, to be consistent, one should compare the higher Ibbotson Associates' before-tax equivalent estimates to the Cornell/Hirshleifer estimate. Thus, the *lowest* Ibbotson Associates' before-tax cost of capital estimate is approximately 10.6 percent, 200 basis points higher than the Cornell/Hirshleifer estimate, while the highest Ibbotson before-tax cost of capital estimate is approximately 14.4 percent, nearly 600 basis points higher than the Cornell/Hirshleifer estimate.

VIII. Price Cap Adjustment

61. Although the Commission's Notice of Proposed Rulemaking in this docket limited the issues to consideration of possible changes in the cost of capital for those LECs still subject to rate of return regulation, AT&T now seeks to expand the scope of this proceeding through its recommendation that the Commission "order the price cap LECs to make a downward exogenous adjustment to the price cap indices to reflect the substantial decrease in their capital costs." [AT&T Responsive Submission at page 34.] AT&T claims that the price cap indices would be overstated if their recommended adjustment is not accepted by the Commission.

62. AT&T's recommendation to lower the price cap index to reflect alleged changes in the cost of capital is based on a fundamental misunderstanding of the purpose and implementation of price cap regulation. The Commission's price cap plan is designed to break the link between a company's prices and its costs, including its cost of capital. If the Commission changes the price cap index to reflect alleged changes in the cost of capital, it will reestablish the link between the price cap LECs' prices and their capital costs, thus depriving the price cap LECs of any incentive to reduce their capital costs through actions such as capital/labor mix decisions, debt refinancings, tougher underwriter and bank negotiations, and capital structure decisions.

63. AT&T's recommendation to adjust price caps based on a link to the LECs' cost of capital has been previously considered and properly rejected by the Commission. The Commission has previously recognized that reinitializing the price cap indices on the basis of rate of return considerations is not consistent with the basic price cap philosophy of providing incentives for the LECs to be more efficient. At ¶292 of its First Report and Order in Docket No. 96-262, May 7, 1997, the Commission stated:

> Moreover, because the basic theory of our existing price cap regime is that the prospect of retaining higher earnings gives carriers an incentive to become more efficient, we believe that rate of return-based reinitialization would have substantial pernicious effects on the efficiency objectives of our current policies. In this regard, we have often expressed concern in past price cap orders that maintaining links between rate levels and a carrier's achieved rate of return would undercut the efficiency incentives price cap regulation was designed to encourage.

The Commission's reasoning is economically sound, and AT&T's proposal should be rejected.

64. AT&T's recommendation to lower the price cap index to reflect alleged changes in the cost of capital also fails to recognize that general changes in the cost of capital are already accounted for by changes in the GNP-PI, and that industry-specific changes in capital costs, caused, for example, by differences in input mix, are already accounted for in the productivity offset. The productivity offset incorporates any differences between economy-wide and telecommunications-industry-specific input prices. Thus, the benefits of any reductions in capital market costs that AT&T alleges have occurred would have already been passed through to ratepayers.

65. In contrast to the clear logic behind the proposition that the price cap mechanism reflects relative changes in capital costs, AT&T argues in its Responsive Submission that the price cap mechanism does not capture changes in the LECs' capital costs. AT&T argues, for example, that the productivity factor does not include changes in LEC capital costs because the capital rental price component of the X-factor is based on the LECs' interstate rates of return, not

on their real costs of capital. AT&T also argues that the annual inflation adjustment (GDP-PI) does not reflect changes in capital costs because it only reflects capital cost changes for firms of average capital intensity, while the price cap LECs have above-average capital intensity.

66. AT&T's arguments regarding the alleged failure of the price mechanism to capture changes in LEC capital costs further reveal AT&T's misunderstanding of the price cap mechanism. While it is true that changes in the GDP-PI reflect changes in the economy-wide cost of capital, changes in the telecommunications industry-specific cost of capital due to differences in capital intensity are accounted for in the total productivity factor through the relative weights given to the various and capital labor inputs. Thus, if the cost of capital factor has declined, the larger weight assigned to the capital factor will result in a larger reduction in LEC capital costs than for the average company. Furthermore, AT&T misunderstands that the capital rental price is based on the LECs' total inter- and intrastate rates of return, not on the LECs' interstate rates of return alone.

67. In summary, AT&T's recommendation to adjust the price cap index downward for the alleged decrease in capital costs should be rejected. The Commission has previously recognized that proposals to adjust price caps for changes in rates of return is inconsistent with price cap regulation's fundamental goal of providing incentives for increased efficiency. In addition, the price cap mechanism is designed to capture changes in general levels of capital costs and differences in capital intensity between industries. While the price cap mechanism is not designed to reflect increases in capital costs due to increases in relative risk, this failure works to the advantage of AT&T because the price cap LECs have undoubtedly become relatively more risky since price caps were initiated. Finally, it would be inappropriate to consider any changes in the cost of a single input without considering changes in the cost of all inputs. Clearly, AT&T's recommendation goes well beyond the scope of this proceeding.

IX. Fifty Basis Point Downward Adjustment

68. AT&T's recommended 8 percent to 9 percent allowed rate of return for the rate of return LECs includes a 50 basis point downward adjustment to reflect: (1) the alleged lower risk of the LECs' access business; (2) the use of an embedded cost of debt that is higher than the market cost of debt; (3) the reduction in interest rates they allege has occurred since December 1997, the time of their study; and (4) the alleged overstatement of RBOC book equity due to the alleged $5 billion overstatement in LEC assets reported in a recent Commission audit. None of these reasons support AT&T's recommended downward adjustment.

69. AT&T's assertion that the RHCs' interstate access business is less risky than their other businesses is not supported in AT&T's testimony. Indeed, as described in my previous affidavits, there is ample evidence that the RHCs' interstate access businesses on a stand-alone basis are among their riskiest businesses. AT&T's witnesses Cornell/Hirshleifer have already made a downward adjustment of significantly more than 50 basis points (through their use of a book value capital structure) to reflect their view that the interstate access business is less risky than the RHCs' other businesses. A further downward adjustment would double count the alleged risk differences between the RHCs' businesses.

70. AT&T's remaining reasons for their 50 basis point downward adjustment also fail to support their recommendation. In particular, AT&T fails to recognize that the difference between the embedded cost of debt and the market cost of debt is immaterial when a market value capital structure is correctly used to calculate the weighted average cost of capital, that the LECs' market cost of debt has not changed significantly in the past year,[11] and that the alleged

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[11] The yield on Moody's A-rated utility bonds in January 1998 when AT&T performed their cost of capital studies was 7.04 percent; the average yield during the year was 7.04 percent, the average yield during February 1999 is 7.09 percent, and during March 1999, 7.26 percent. The yield on Moody's A-rated industrial bonds in January 1998 was 6.81 percent. The average yield in March 1999 is 7.02 percent. My studies used the 6.68 percent yield on Moody's A-rated industrials at December 1998 (a 12-month low).

$5 billion in "phantom" assets (even if the allegation were true) has no effect on the RHCs' market values or their weighted average cost of capital. The LECs' weighted average cost of capital is determined in the marketplace, not on the LECs' books.

Schedule 1
Anomalous Discounted Cash Flow Results for Natural Gas and Electric Companies Using Cornell/Hirshleifer Three-Stage DCF Model (Also See Cornell/Hirshleifer Attachment 11)[12]

Company	Closing Price 3/31/98	I/B/E/S G	Annual Dividend	DCF Result 5.50% growth
AGL Resources	21.500	4.29%	$1.08	10.07%
Cascade Natural Gas	16.500	3.57%	$0.96	10.52%
Connecticut Energy Corp	30.750	5.47%	$1.34	9.85%
Indiana Energy	30.438	6.95%	$1.20	9.93%
Laclede Gas Corp	25.063	1.70%	$1.32	9.36%
National Fuel Gas	47.000	8.00%	$1.77	10.10%
New Jersey Resources	39.188	5.83%	$1.64	9.80%
Northwest Natural Gas	28.125	5.35%	$1.22	9.79%
Peoples Energy	36.375	5.07%	$1.91	10.58%
Piedmont Natural Gas	34.750	7.33%	$1.28	9.77%
South Jersey Industries	29.688	4.00%	$1.44	9.80%
Southwest Gas	20.875	9.37%	$0.82	10.80%
Washington Gas Light	27.375	4.64%	$1.20	9.59%
Mkt. Wtd. Average				10.01%

Company	Closing Price 3/31/98	I/B/E/S g	Annual Dividend	DCF Result 5.50% growth
BEC Energy	41.938	2.33%	$1.88	8.94%
Consolidated Edison	46.750	2.44%	$2.12	9.01%
DTE Energy	39.313	2.29%	$2.06	9.54%
Eastern Utilities Associates	27.250	1.75%	$1.66	10.04%
GPU Inc.	44.250	3.21%	$2.06	9.36%
New England Electric	45.688	2.43%	$2.36	9.53%
OGE Energy	57.875	3.12%	$2.66	9.28%
PECO Energy	22.125	0.59%	$1.00	8.46%
Pinnacle West	44.438	6.11%	$1.22	8.40%
PP&L Resources	23.438	2.08%	$1.67	11.03%
Mkt. Wtd. Average				9.26%

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[12] Dr. Cornell presented data on these electric and natural gas companies in California in his testimony filed on behalf of the Office of Ratepayer Advocate of the California Public Utilities Commission on August 10, 1998, in Application Nos. 98-05-019, 021, and 024. His data, duplicated on this schedule, are shown on Attachments 4a, 4b, 9a, and 9b. In his DCF calculations in that testimony, however, Dr. Cornell used a long-term growth estimate of 5.05 percent instead of the 5.50 percent long-term growth estimate used here and also used by Mr. Hirshleifer in testimony filed contemporaneously in the aforementioned Florida telecommunications proceeding, Docket No. 980696-TP.

STATE OF NORTH CAROLINA)
)
COUNTY OF Durham)

James H. Vander Weide, being first duly sworn, deposes and says that he has read the foregoing affidavit of James H. Vander Weide, and that the matters and things set forth therein are true and correct to the best of his knowledge, information, and belief.

James H. Vander Weide
James H. Vander Weide

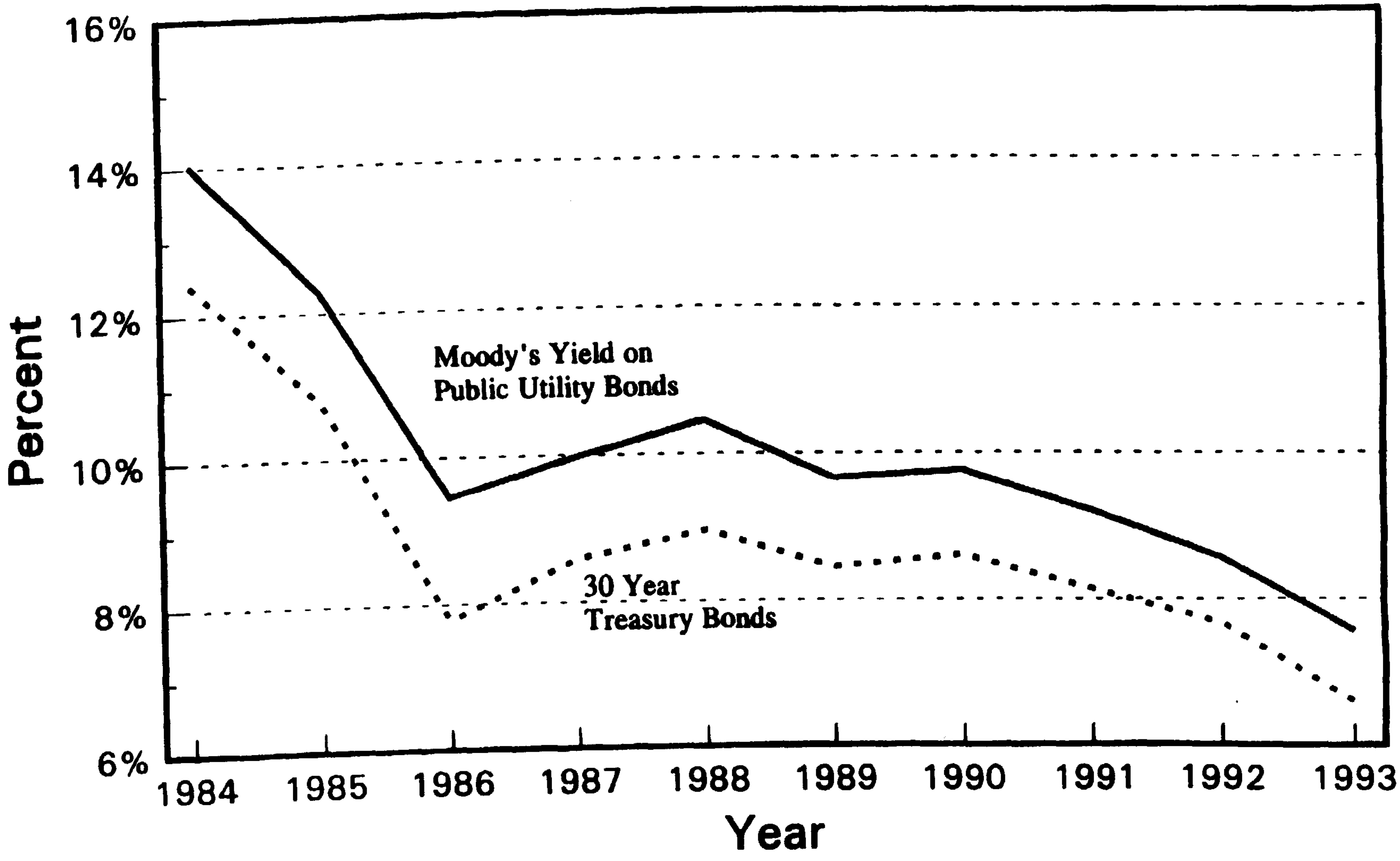
Subscribed and sworn to before me this 6 day of April, 1999.

Carol N Lowans
Notary Public In and For the State of North Carolina

My commission expires on 12-2-2001.

EXHIBIT 2

Moody's Composite Yield on Public Utility Bonds and 30 Year Treasury Bond Rates
1984-1993



CERTIFICATE OF SERVICE

I hereby certify that on this 8th day of April, 1999, copies of the foregoing "Rebuttal Comments of Bell Atlantic" were sent by first class mail, postage prepaid, to the parties on the attached list.

Jennifer L. Hoh

Jennifer L. Hoh

* Via hand delivery.

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